



# Introduction

We applied an analytical technique to create a number of alternative technical solutions for MT PRIME.

## ■ Establish criteria

- ➔ Criteria for choosing between alternatives were drawn from the State's information management principles

## ■ Define dimensions

- ➔ The characteristics of the potential solutions were determined, which were called dimensions

## ■ Consider options within the dimensions

- ➔ Within each dimension a range of options was considered

## ■ Determine alternatives

- ➔ Once the key dimensions and the options within those dimensions were established, the alternatives were generated by choosing an option within each dimension

## ■ Conduct evaluation

- ➔ Having determined the main alternatives, those alternatives were evaluated against the criteria

*DIMENSIONS represent the different aspects of the solution.*

Functionality	Hardware	Network	...
Option	Option	Option	Option
Option	Option	Option	Option
Option	Option	Option	Option
Option	Option	Option	Option
Option		Option	
Option			

*OPTIONS within each dimension show the possibilities within that dimension*

This section discusses the dimensions of the solutions, the key alternatives, the criteria by which the alternatives were evaluated and concludes with our recommended alternative.



# Dimensions of the Alternatives

## ■ Application Functionality

- Describes the functional processes (i.e. accounts payable, fixed assets, budgeting, etc.) that are supported by the alternative.

## ■ Application Distribution

- Describes the degree to which the application may be distributed; functionally (HR server, accounting server, budgeting server, etc.), departmentally (agency, department, etc.) or geographically (counties, area offices, network hubs, etc.).

## ■ Application Architecture

- Describes the anticipated application structure (i.e. client-server, monolithic, object oriented) which the new systems will likely utilize to achieve the desired functionality.

## ■ Data Architecture

- Describes how the solution's data should be distributed to support the desired Application Functionality, Architecture and Distribution.

## ■ Technical Architecture

- Describes the topology of the major processing platforms and the supporting hardware, system software and network components required to support the application architecture. Usually implies the distribution of major processing nodes on a network and their interrelationships.

## ■ Database Environment

- Describes the types of database management technologies which could be used to store, organize and retrieve corporate data required by the alternative.

## ■ Hardware Environment

- Describes the hardware configurations (not including workstations or networks) which will provide the primary platforms for the alternative.

## ■ Workstation Environment

- Describes the types of desktop (and laptop) technologies which will be used as the primary access devices for users of the alternative.

## ■ Network Environment

- Describes the underlying data telecommunications infrastructure and protocols which will be utilized by the alternative to communicate between the workstation environment and the hardware environment.

## ■ Solution Type

- Describes the scope and degree of uniformity (among agencies) of the alternative.

## ■ Acquisition Technique

- Describes the method of procuring the alternative which takes into account various purchase/construction methods available.

## ■ Implementation Technique

- Describes the various means of implementing the alternative.

## ■ Support Technique

- Describes the various means of supporting the alternative.

Choosing different options within each of these dimensions creates the alternative solutions.



# Criteria for Evaluating Alternatives

The resulting alternatives were then evaluated against the following criteria. The criteria address two main issues: information management and implementation.

## INFORMATION MANAGEMENT CRITERIA

### ■ Functional Performance (17%)

Does the alternative provide for:

- ➔ integrated functionality
- ➔ consistent statewide information
- ➔ core functions with room for growth in both transaction volume and functionality
- ➔ advanced reporting capabilities (including availability of information)

### ■ Accessibility Performance (15%)

Does the alternative provide for:

- ➔ shared, common systems
- ➔ broad accessibility to agencies, managers, the public, etc.

### ■ Operational Performance (10%)

Does the alternative provide for:

- ➔ easy integration with operational systems
- ➔ easy upgrades
- ➔ low-cost maintenance and operation

### ■ Technical Performance (8%)

Does the alternative provide for:

- ➔ consistency with established standards
- ➔ compliance with open standards
- ➔ support of a diverse technology base



# Criteria (Cont'd)

---

## IMPLEMENTATION CRITERIA

### ■ Implementation Cost (10%)

What is the cost of implementation of the system statewide?

### ■ Other Risks (15%)

What are the risks that the alternative:

- won't support business processes in the future
- won't be supported in the future
- will become obsolete
- may contain significant unknowns

### ■ Timing (15%)

Does the alternative comply with:

- Year 2000 requirements
- fiscal year timing requirements

### ■ Ability to implement (10%)

To what extent will be the State be able to:

- make the necessary policy and personnel changes
- attract the necessary implementation resources
- generate agency support for change
- process changes in parallel



# The Alternatives

The State has 7 distinct, technically viable and realistic alternatives that can be grouped into 3 categories: fixing, building or buying.

■ Each of these options is:

- ➔ technically viable
- ➔ distinctly different, though they may border on each other
- ➔ may encompass a range of options for any given dimension

Category	Alternative
FIX	1. Year 2000 Fix
	2. Data Warehouse Construction
BUILD	3. Client-Server Construction
	4. Emerging Technologies Construction
	5. Mainframe Construction
BUY	6. Multiple Package Purchase
	7. Single Package Purchase

Summaries of each alternative follow.



# 1. Year 2000 Fix

---

Minimal programming to fix the current suite of mainframe applications for issues such as Year 2000 compliance but leaving functionality essentially the same.

---

## ■ Advantages

- lowest cost option
- resources available
- minimal risk
- stable processing environment
- no major change

## ■ Disadvantages

- poor functionality
- poor integration
- does not support business directions
- does not support process improvement
- increasing risk associated with technical obsolescence
- continued expenditure on agency administrative systems
- no major change

---

**Total Cost: \$1M**



## 2. Data Warehouse Construction

Keep the current suite of applications, repairing them so they will function past the Year 2000, but add a data warehouse to augment reporting capabilities.

### ■ Advantages

- increased access to data
- technical step forward
- moderate cost
- stable processing environment
- limited training required

### ■ Disadvantages

- integration effort
- poor functionality
- questionable timeliness of data
- limited support of business directions and needs
- does not support process improvement
- increasing risk associated with technical obsolescence
- continued expenditure on agency administrative systems

**Total Cost: \$4.4M**



## 3. Client-Server Construction

---

Create a new suite of core applications using modern technologies. For example, designing new applications in-house on an Oracle platform.

---

### ■ Advantages

- leading edge functionality
- custom designed for state needs
- supports process improvement
- supports business directions and needs
- skills development opportunity
- potential resale opportunity

### ■ Disadvantages

- high cost
- high risk
- lack of timeliness in deployment
- lack of available human resources
- all upgrades done in-house

---

**Total Cost: \$28.8M**





## 4. Emerging Technologies Construction

Creating new applications to leverage impending technological advances.

### ■ Advantages

- ➔ state of the art technology
- ➔ significant opportunity to reshape the delivery of government services
- ➔ superior functionality
- ➔ supports business directions and needs
- ➔ potential for resale
- ➔ skills development opportunity

### ■ Disadvantages

- ➔ extreme risk
- ➔ extreme cost
- ➔ lack of timeliness in deployment
- ➔ lack of available human resources
- ➔ all upgrades done in-house

**Total Cost: \$43.9M**



## 5. Mainframe Construction

---

Build a new mainframe solution appropriate to the State's changing needs and business directions.

---

### ■ Advantages

- custom functionality
- supports business directions
- skills development opportunity
- some available human resources
- no new hardware costs
- resale potential

### ■ Disadvantages

- high cost
- high risk
- lack of timeliness of deployment
- all upgrades done in-house
- increasing risk associated with technical obsolescence

---

**Total Cost: \$19.7M**



## 6. Multiple Package Purchase

---

Purchase a number of packages which vary on some criteria such as scale (larger systems for larger agencies) or functionality (best of breed as required).

---

### ■ Advantages

- leading edge functionality
- agency autonomy
- supports business directions
- supports process improvement
- upgrades easier at agency level
- vendor supported
- readily available
- proven technology

### ■ Disadvantages

- major integration challenges
- diverse support requirements
- high maintenance costs
- barrier to agency coordination
- data access challenges
- vendor upgrades result in ongoing integration efforts

---

**Total Cost: \$19.1M**



## 7. Single Package Purchase

---

Buy a centralized software suite of integrated, enterprise-wide applications from a single vendor.

---

### ■ Advantages

- leading edge functionality
- vendor support and upgrades
- moderate cost
- supports business directions
- readily available
- proven technology
- moderate risk
- process improvement opportunity
- avoiding package modifications will force state-wide changes

### ■ Disadvantages

- functionality not customized to state needs
- avoiding package modifications will force state-wide changes

---

**Total Cost: \$15.5M**



# Summary of Alternatives

Alternative	Score	Cost (in Millions)
1. Year 2000 Fix	562	\$1
2. Data Warehouse Construction	512	\$4.4
3. Client-Server Construction	510	\$28.8
4. Emerging Technologies Construction	474	\$43.9
5. Mainframe Construction	476	\$19.7
6. Multiple Package Purchase	452	\$19.1
7. Single Package Purchase	740	\$15.5



# Scoring Summary

	Weight:	17%	15%	10%	8%	10%	15%	10%	15%	
ALTERNATIVES		Functional Performance	Accessibility Performance	Operational Performance	Technical Performance	Implementation Cost	Timing	Ability to Implement	Other Risks	
1. Year 2000 Fix		3 51	4 60	4 40	2 16	9 90	7 105	8 80	8 120	<b>562</b>
2. Data Warehouse Construction		4 68	6 90	3 30	3 24	6 60	6 90	6 60	6 90	<b>512</b>
3. Client-Server Construction		9 153	9 135	5 50	9 72	2 20	1 15	2 20	3 45	<b>510</b>
4. Emerging Technologies Construction		10 170	10 150	4 40	8 64	1 10	1 15	1 10	1 15	<b>474</b>
5. Mainframe Construction		8 136	7 105	5 50	5 40	4 40	1 15	3 30	4 60	<b>476</b>
6. Multiple Package Purchase		7 119	6 90	3 30	6 48	4 40	3 45	2 20	4 60	<b>452</b>
7. Single Package Implementation		8 136	9 135	10 100	8 64	5 50	6 90	6 60	7 105	<b>740</b>



# Pricing Summary

(in thousands)	FIX OPTIONS		BUILD OPTIONS			BUY OPTIONS	
	Status Quo	Data Warehouse Construction	Client Server Construction	Emerging Tech Construction	Mainframe Construction	Multiple Package Purchase	Single Package Purchase
<b>Technology Costs</b>							
Modules	\$0	\$0	\$0	\$0	\$0	\$1,500	\$1,200
Maintenance	0	0	0	0	0	150	180
Hardware	0	500	2,500	2,500	0	2,500	2,500
Workstations	0	0	1,500	1,500	0	1,500	1,500
Other Licences	50	450	1,000	50	1,500	2,500	2,500
Customization	0	0	0	0	0	0	0
<b>Technology Subtotal</b>	<b>\$50</b>	<b>\$950</b>	<b>\$5,000</b>	<b>\$4,050</b>	<b>\$1,500</b>	<b>\$8,150</b>	<b>\$7,880</b>
<b>People Costs</b>							
Conversion Team	\$0	\$0	\$408	\$408	\$408	\$408	\$408
Process Change	0	0	1,000	2,000	1,000	1,000	1,000
Product Specialist	0	900	0	0	0	4,620	2,640
Tools Specialist	672	1,404	13,200	22,000	9,900	990	990
Additional Resources	134	461	2,640	4,400	1,980	1,122	726
Project Management	101	461	3,300	5,500	2,475	1,403	908
Expenses	0	180	3,300	5,500	2,475	1,403	908
<b>People Subtotal</b>	<b>\$907</b>	<b>\$3,406</b>	<b>\$23,848</b>	<b>\$39,808</b>	<b>\$18,238</b>	<b>\$10,946</b>	<b>\$7,580</b>
<b>GRAND TOTAL</b>	<b>\$957</b>	<b>\$4,356</b>	<b>\$28,848</b>	<b>\$43,858</b>	<b>\$19,738</b>	<b>\$19,096</b>	<b>\$15,460</b>

\* includes costs for state staff if they are billable internally